

# ODOT Region 4 Mobility Presentation

## OR126/9<sup>th</sup> St Roundabout

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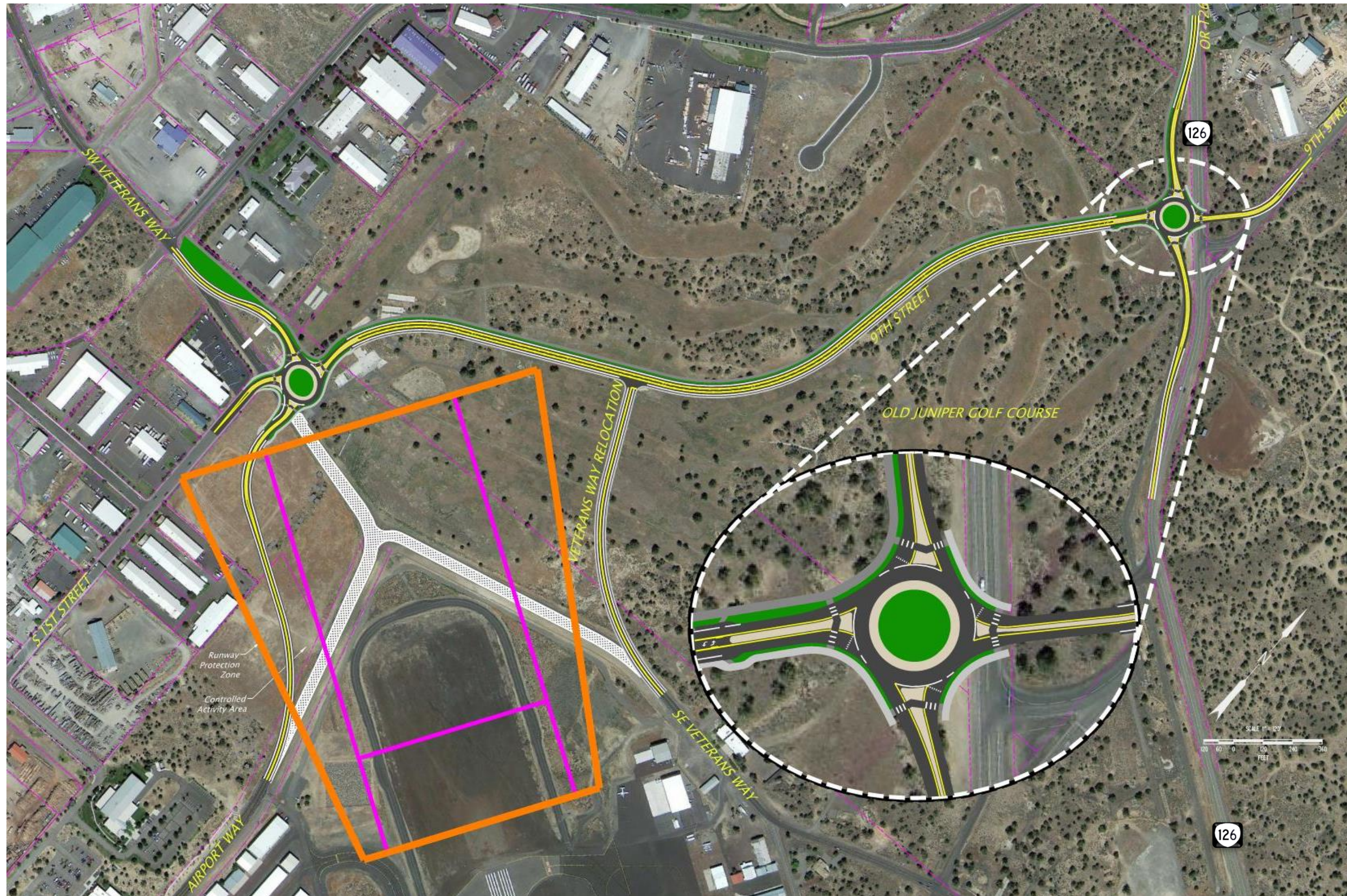
Questions and Next Steps

# Project Background and Purpose

- RFP in Spring 2014
- Funded through DAP stage (30%)
- Not currently funded for construction
- Goals:
  - Improve safety and mobility
  - Provide opportunity for economic development in South Redmond area
  - Move existing intersection outside of Redmond Airport's Runway Protection Zone (RPZ)
- Intersection operational analysis evaluated a signal and roundabout alternative. A single-lane roundabout is the preferred alternative

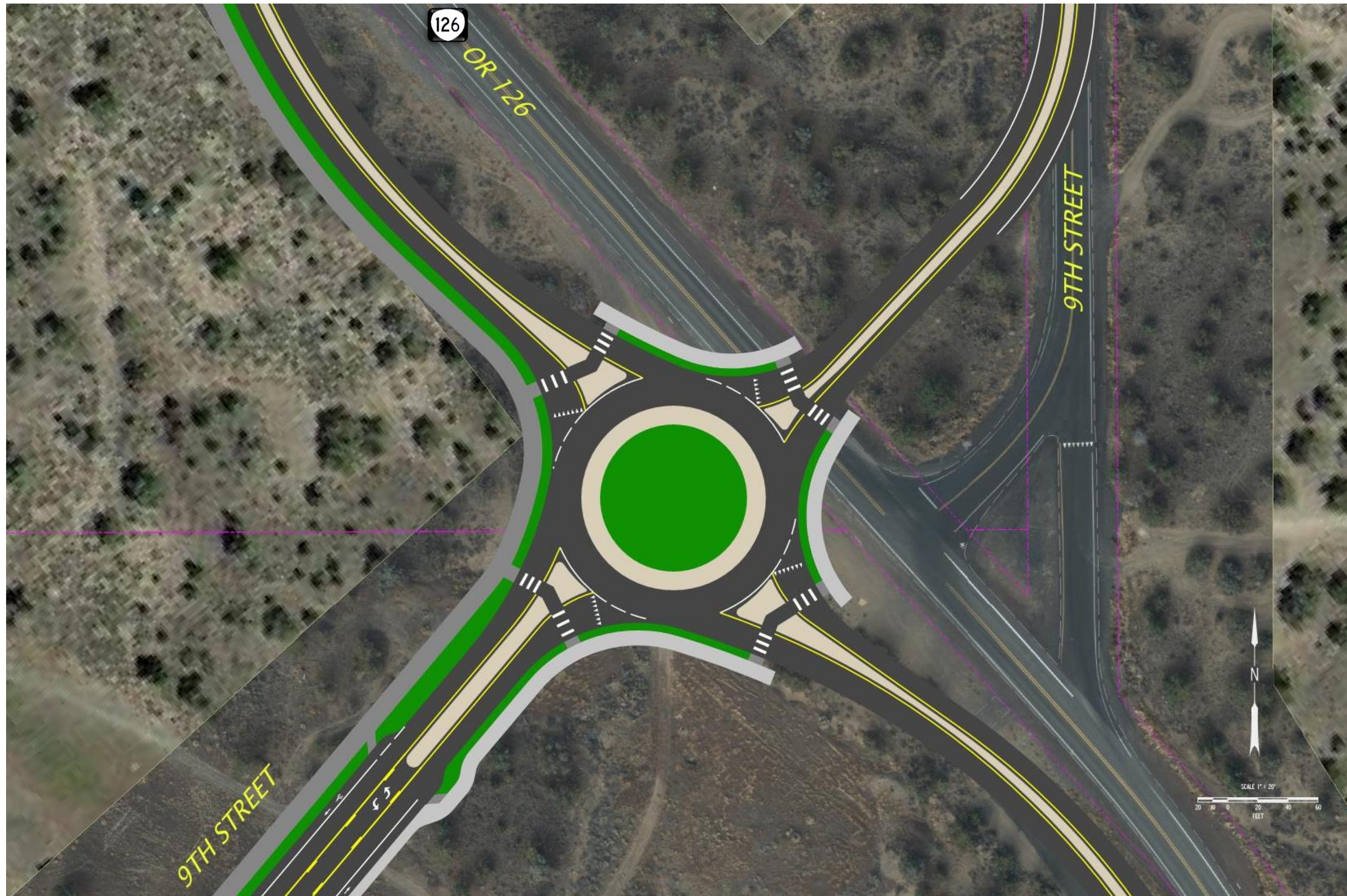


# US97: South Redmond Corridor Improvement Project Concept Design





# OR126/9<sup>th</sup> St Roundabout Concept Design

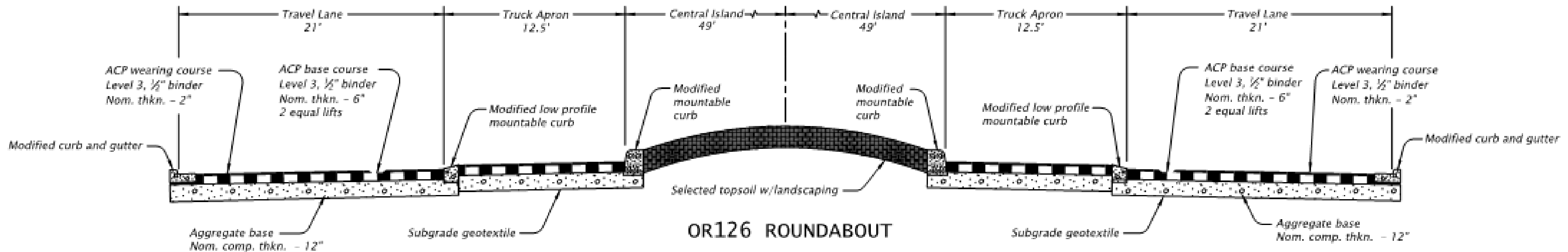


## Design Features

- Mountable splitter islands
- 12.5'-wide truck apron
- Mountable curbs for entire circulatory roadway
- Entry/exit lane width = 12'-24.5' (inside stripe to outside curb)
- Circulating lane width = 21'
- Separated asphalt multi-use path (westside)
- Offline placement (improved constructability)



# OR126/9<sup>th</sup> St Roundabout Typical Section





# Concept Design Comparison to Other Single-Lane Roundabouts

OR126/Tom McCall Rd, Prineville OR



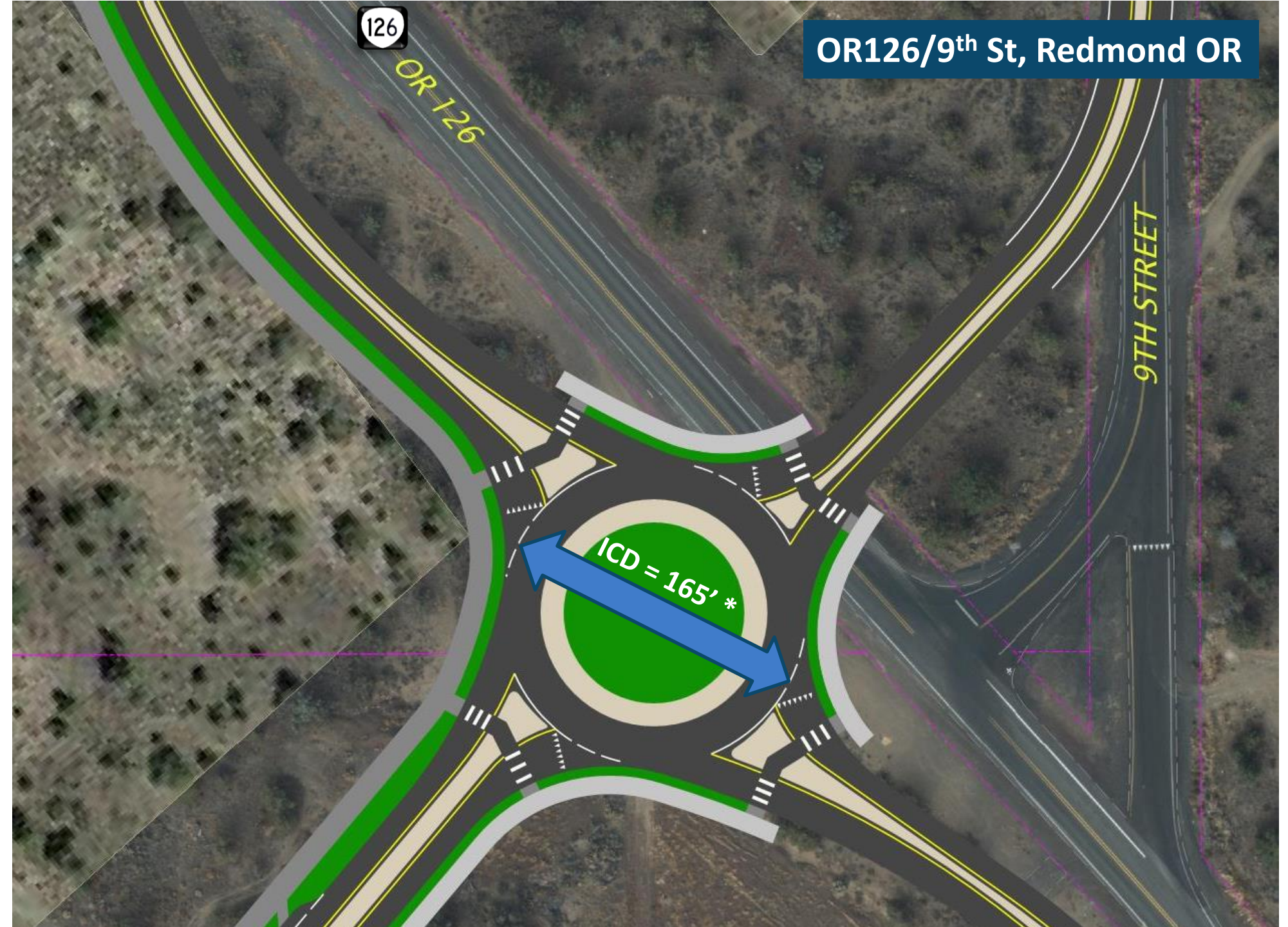
Image: Google Earth

US20/Barclay Dr, Sisters OR



Image: Kittelson & Associates, Inc

OR126/9<sup>th</sup> St, Redmond OR



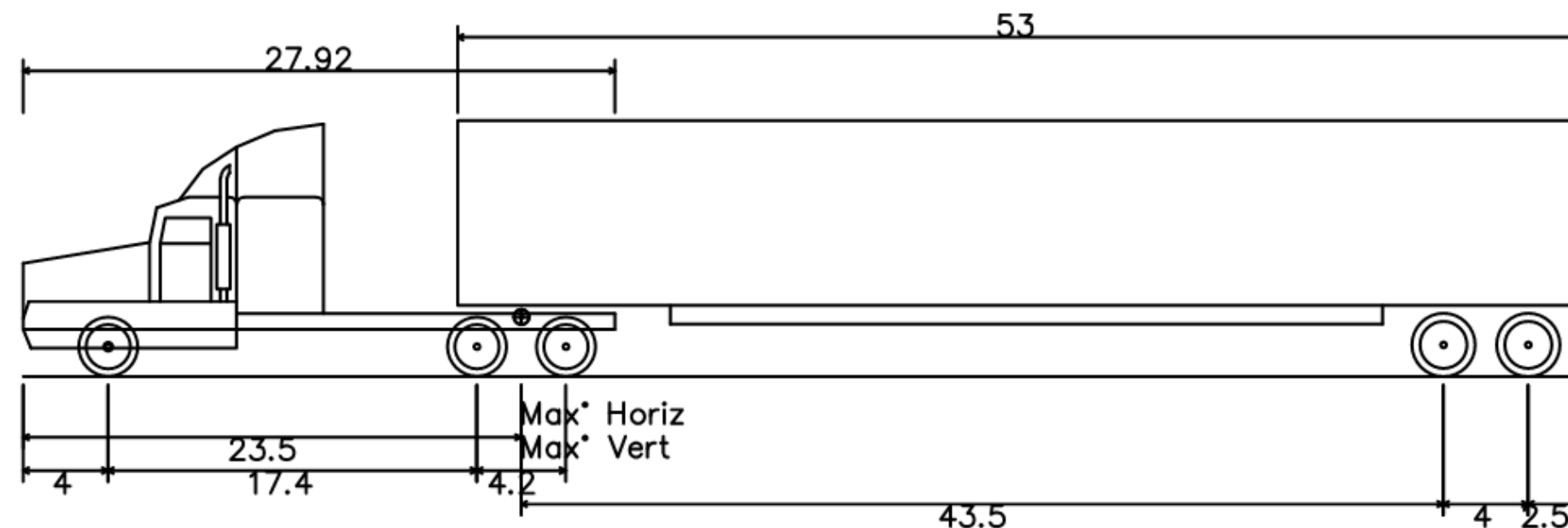
\* Sizing still in process for the OR126/9<sup>th</sup> St roundabout. Input needed from stakeholders on accommodation vehicles and critical turning movements.



# Design Vehicle

**Design Vehicle:** WB-67 (per ODOT Highway Design Manual, Chapter 8.6.4.1)

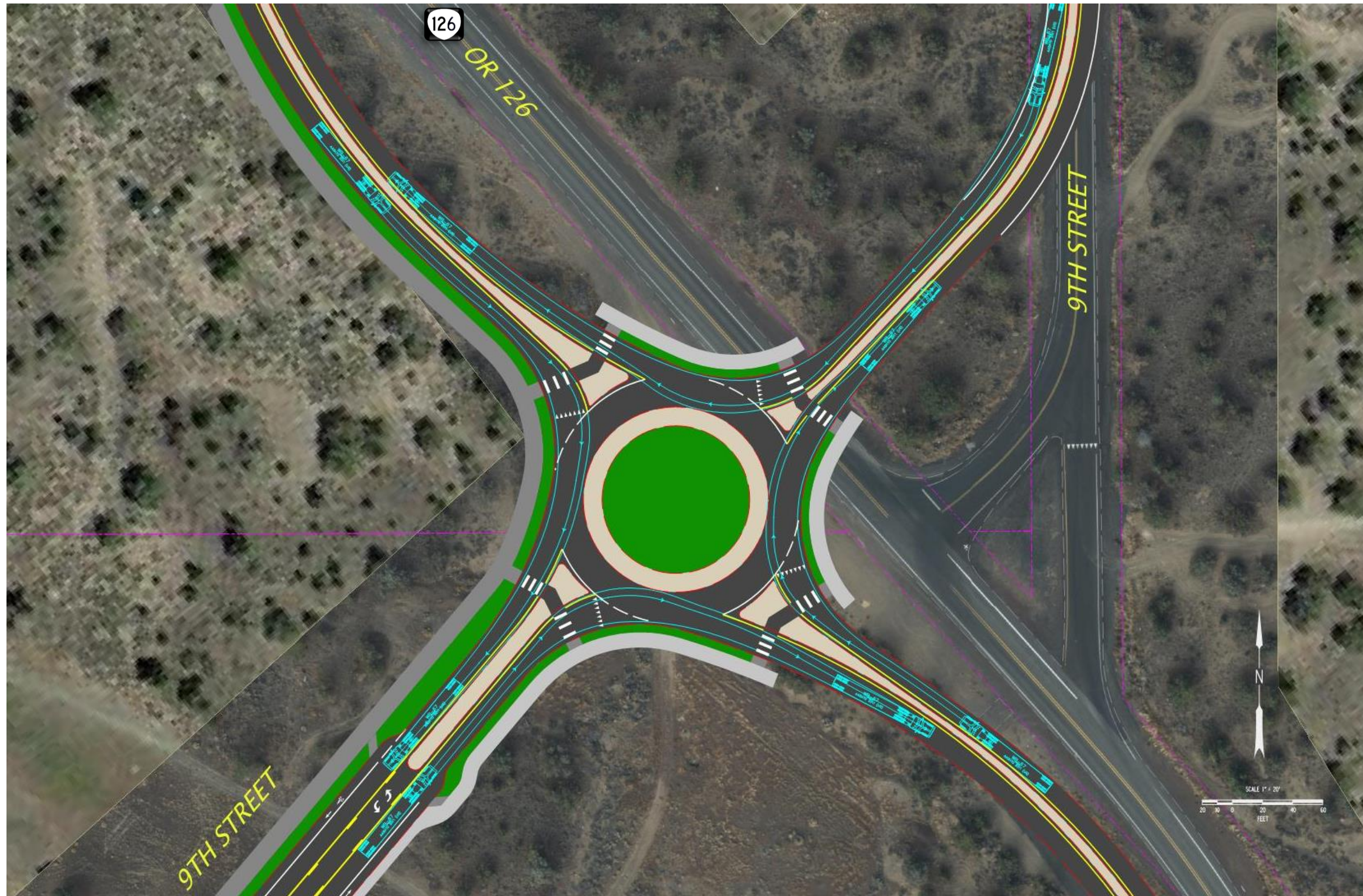
All roundabout movements can accommodate a WB-67 with 1' of clearance with the outside mountable curbs (per FHWA NCHRP Report 672 policy).



WB-67 – Interstate Semi-Trailer		
Overall Length		73.500ft
Overall Width		8.500ft
Overall Body Height		12.052ft
Min Body Ground Clearance		1.334ft
Max Track Width		8.500ft
Lock-to-lock time		6.00s
Max Steering Angle (Virtual)		28.40°

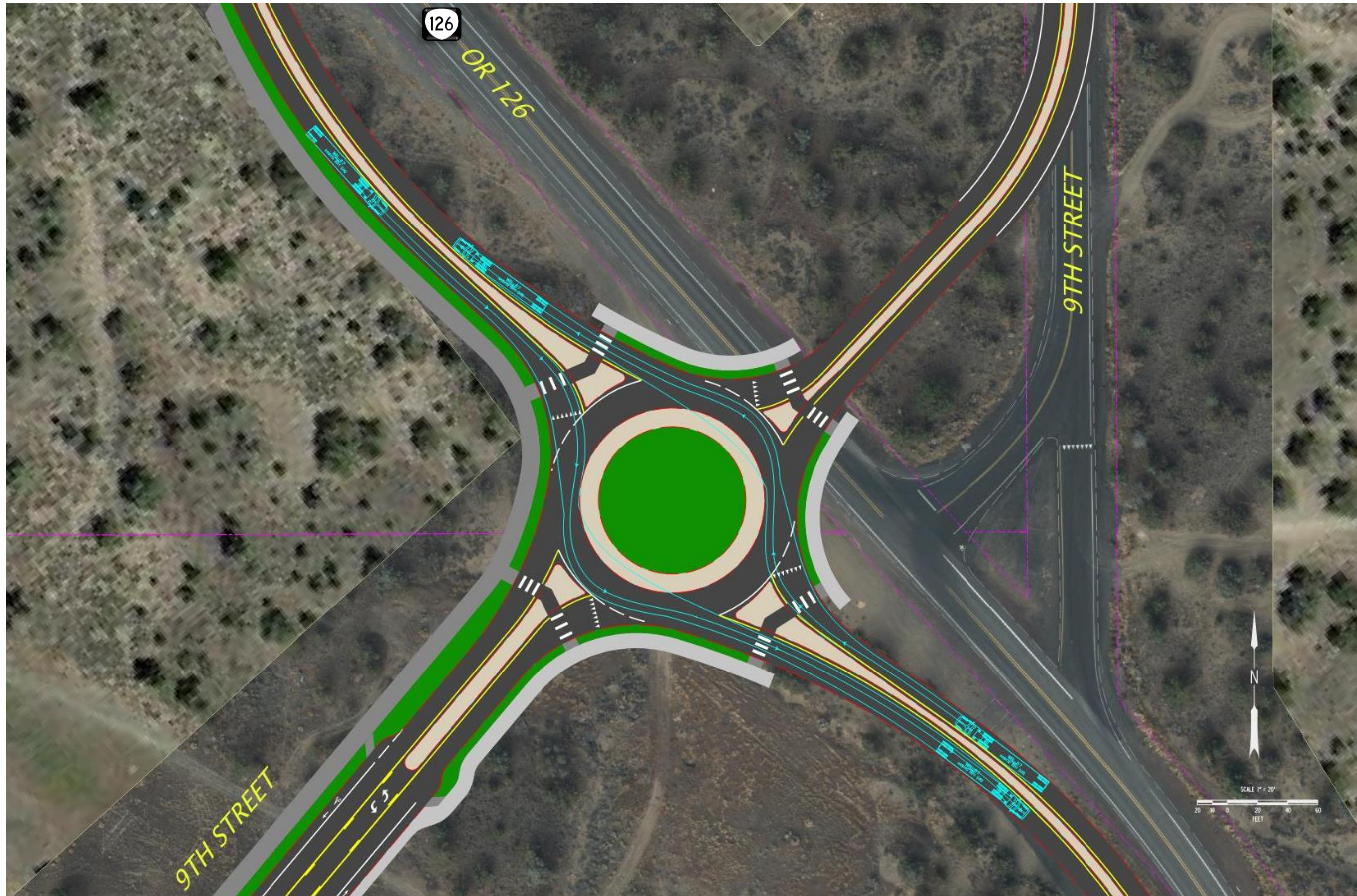


# WB-67 Turning Movements: NB/EB/SB/WB Right



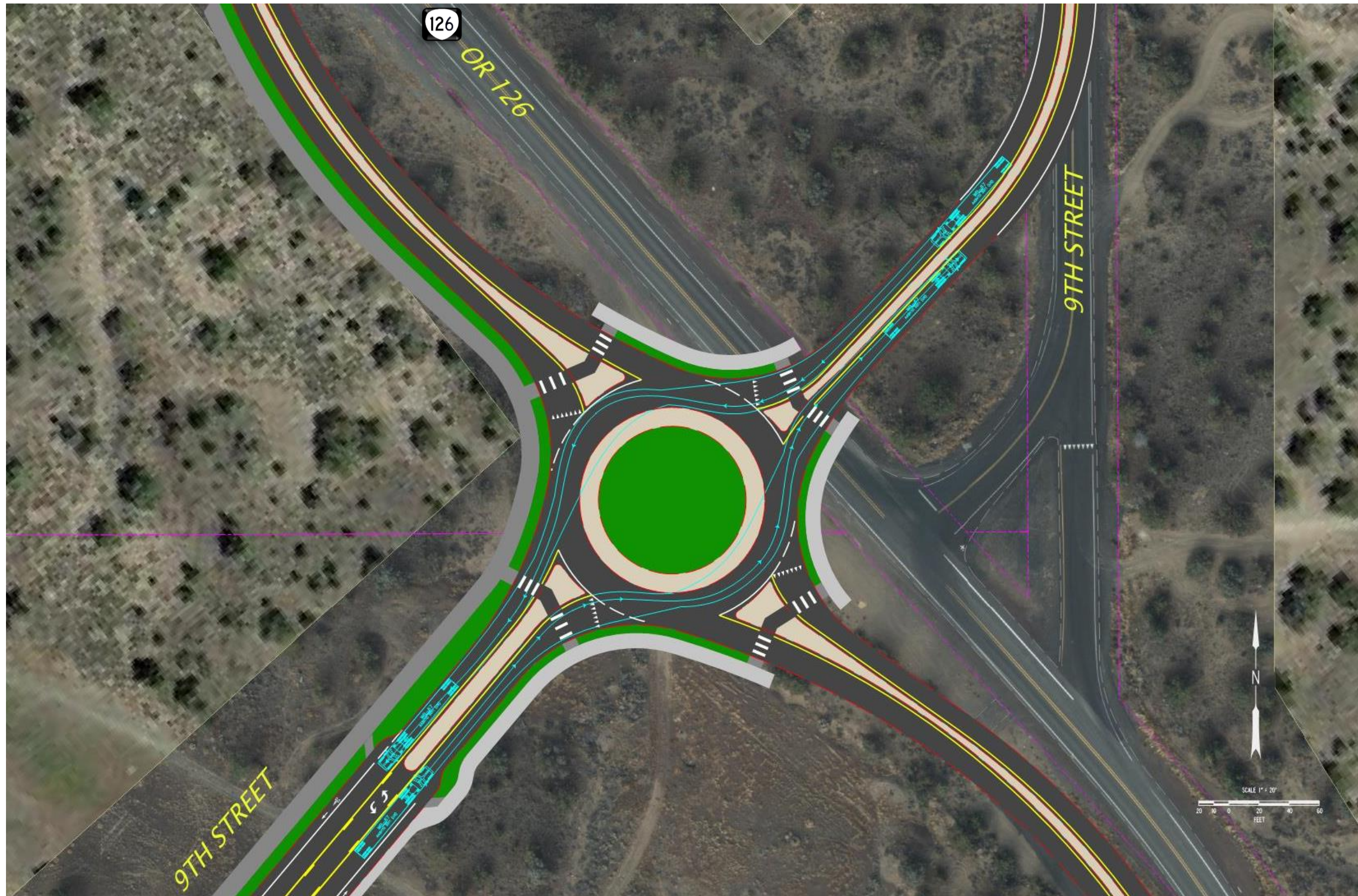


# WB-67 Turning Movements: EB/WB Through (OR126)



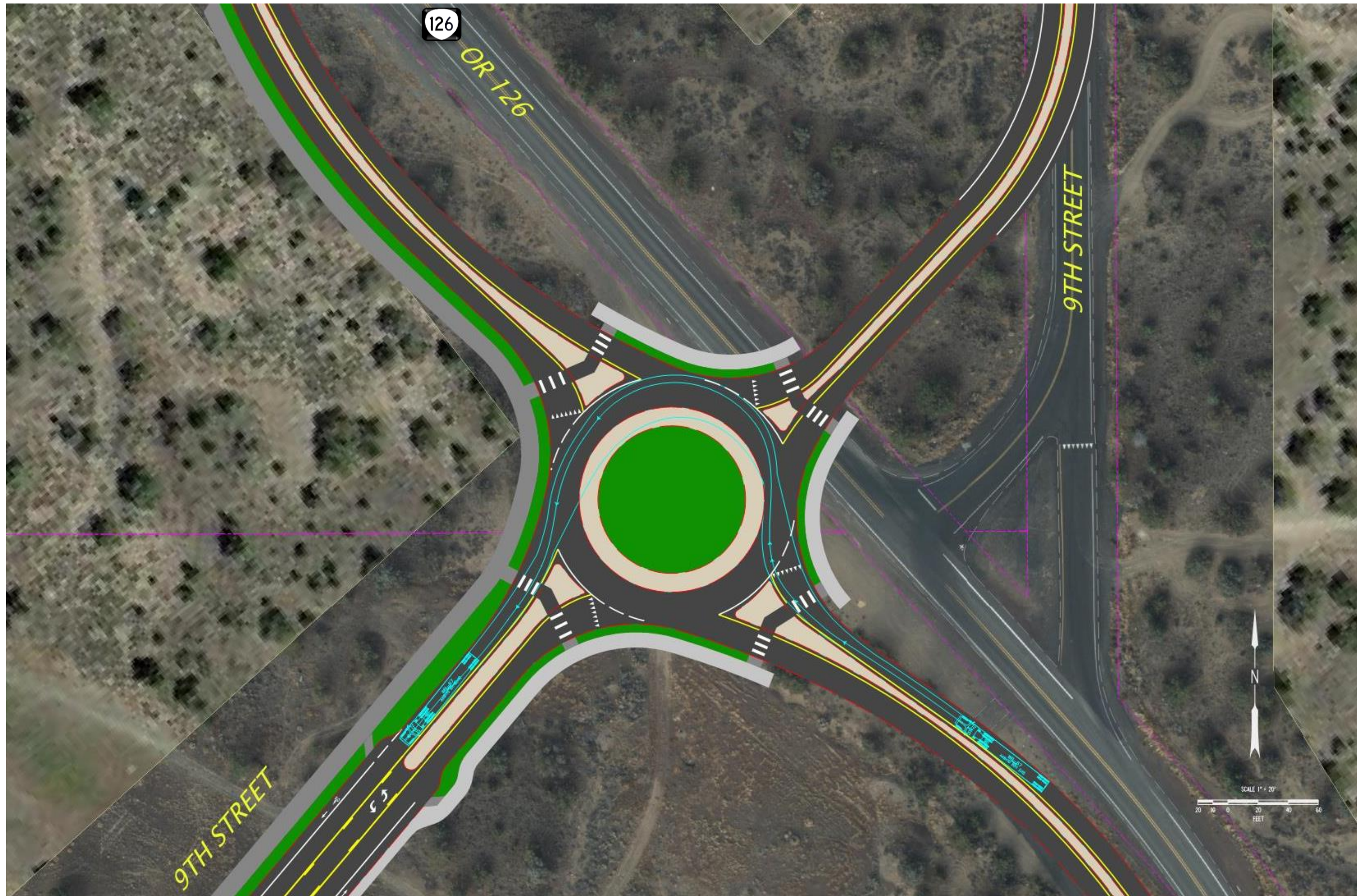


# WB-67 Turning Movements: NB/SB Through (9<sup>th</sup> St)



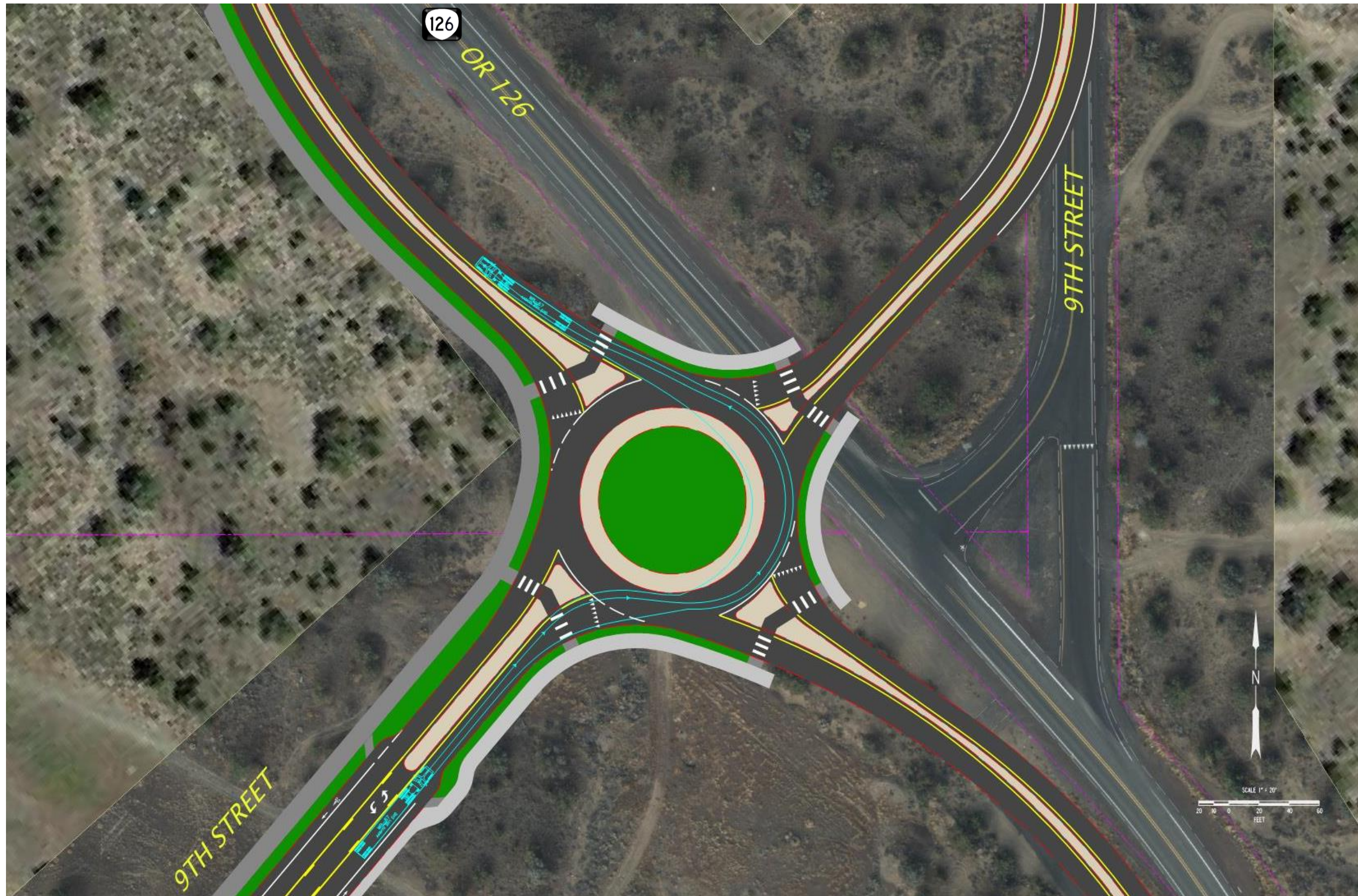


# WB-67 Turning Movements: WB-SB Left



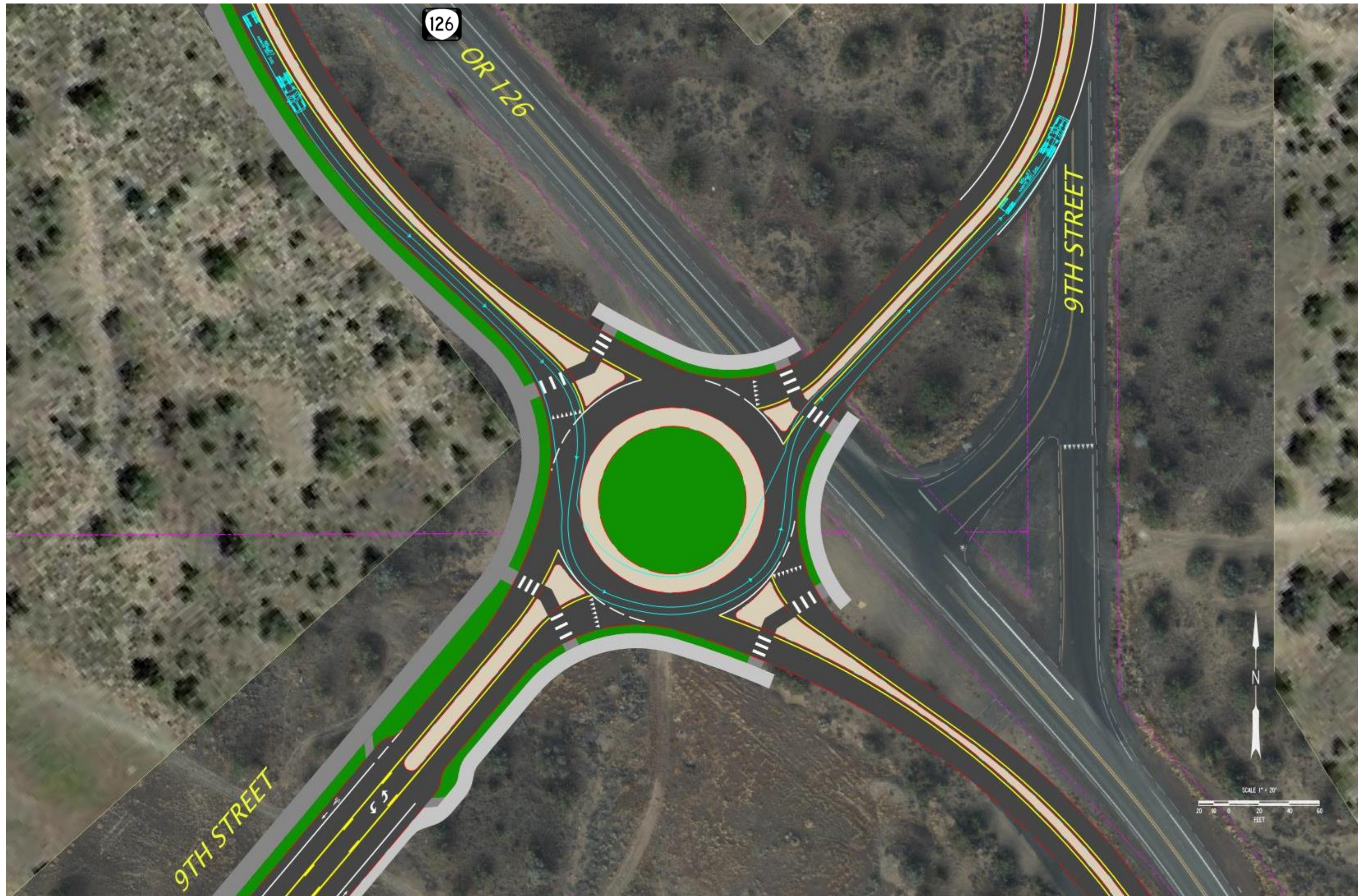


# WB-67 Turning Movements: NB-WB Left



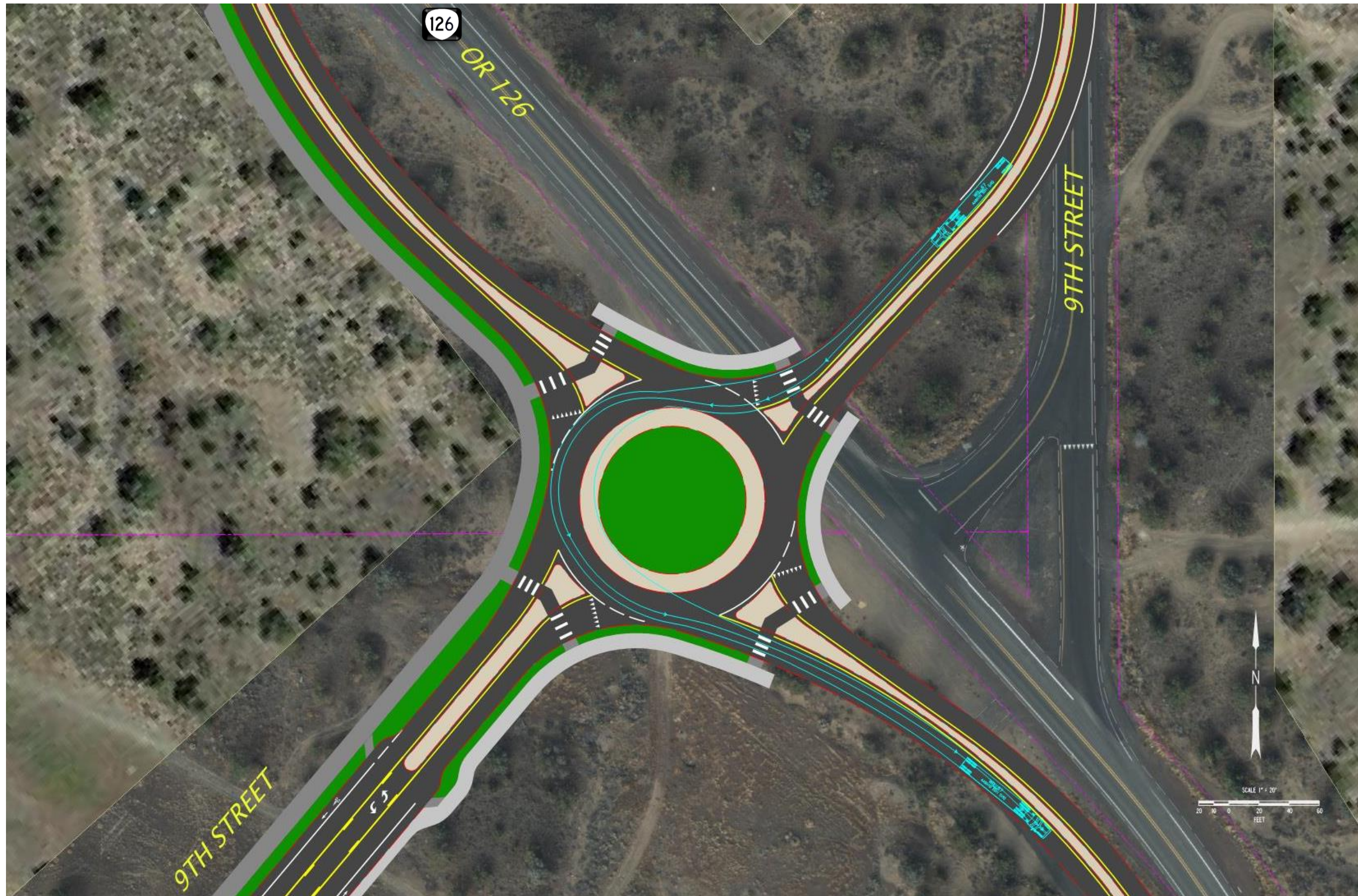


# WB-67 Turning Movements: EB-NB Left





# WB-67 Turning Movements: SB-EB Left

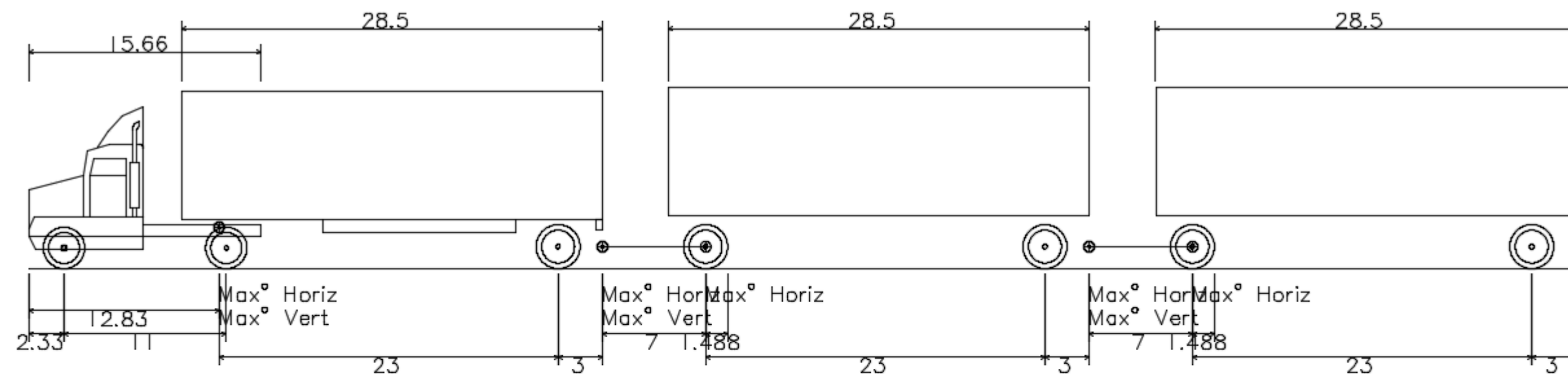




# Over-dimension Vehicle Simulation

**Simulation Vehicle:** WB-100T

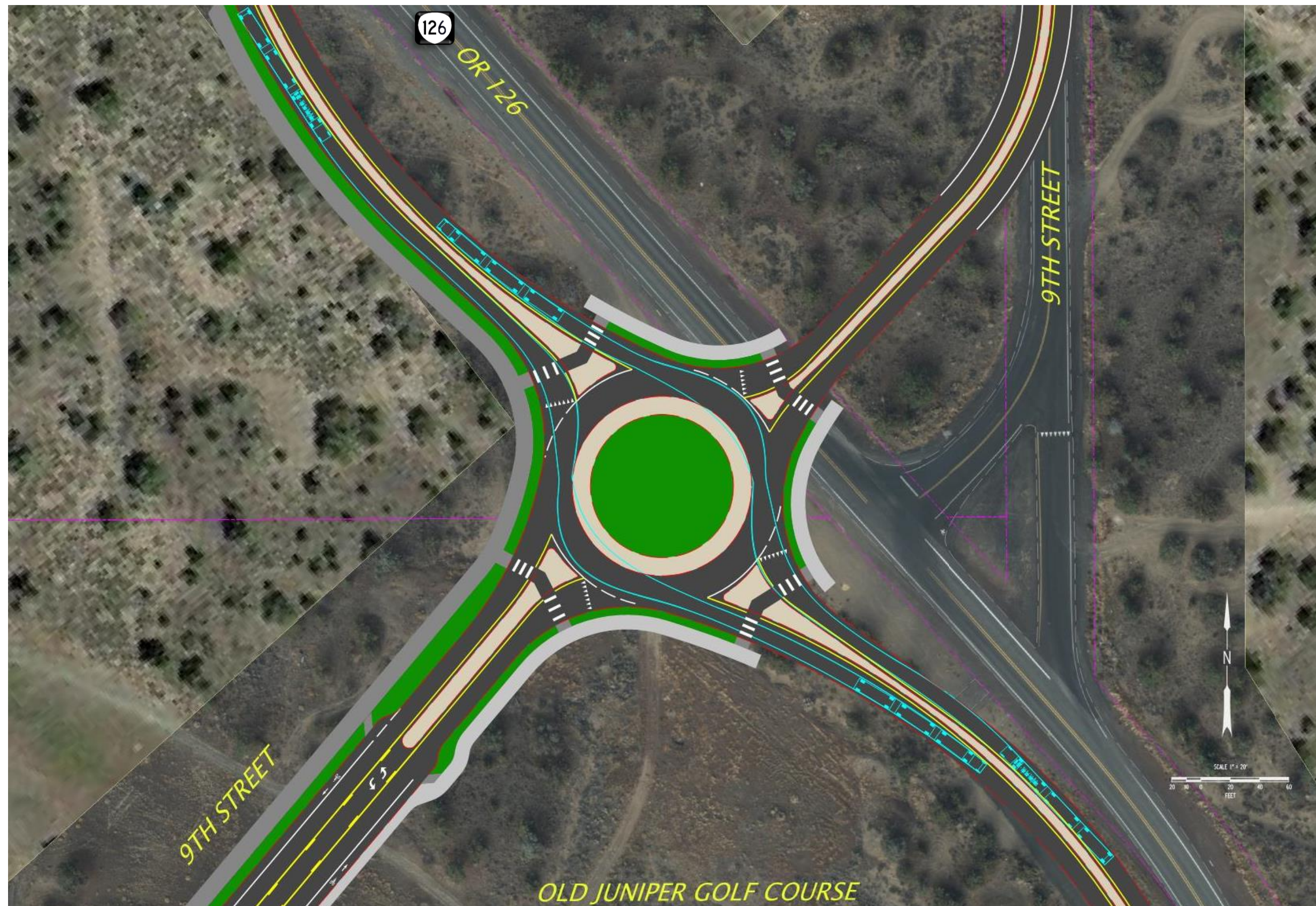
A WB-100T can navigate the EB/WB through (OR126) movements without encroaching on outside mountable curbs, but does not have 1' curb clearance throughout roundabout.



WB-100T - Triple Semi-Trailer/Trailers	
Overall Length	104.830ft
Overall Width	8.500ft
Overall Body Height	12.314ft
Min Body Ground Clearance	1.334ft
Max Track Width	8.500ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	16.00°



# WB-100T Turning Movements: EB/WB Through (OR126)

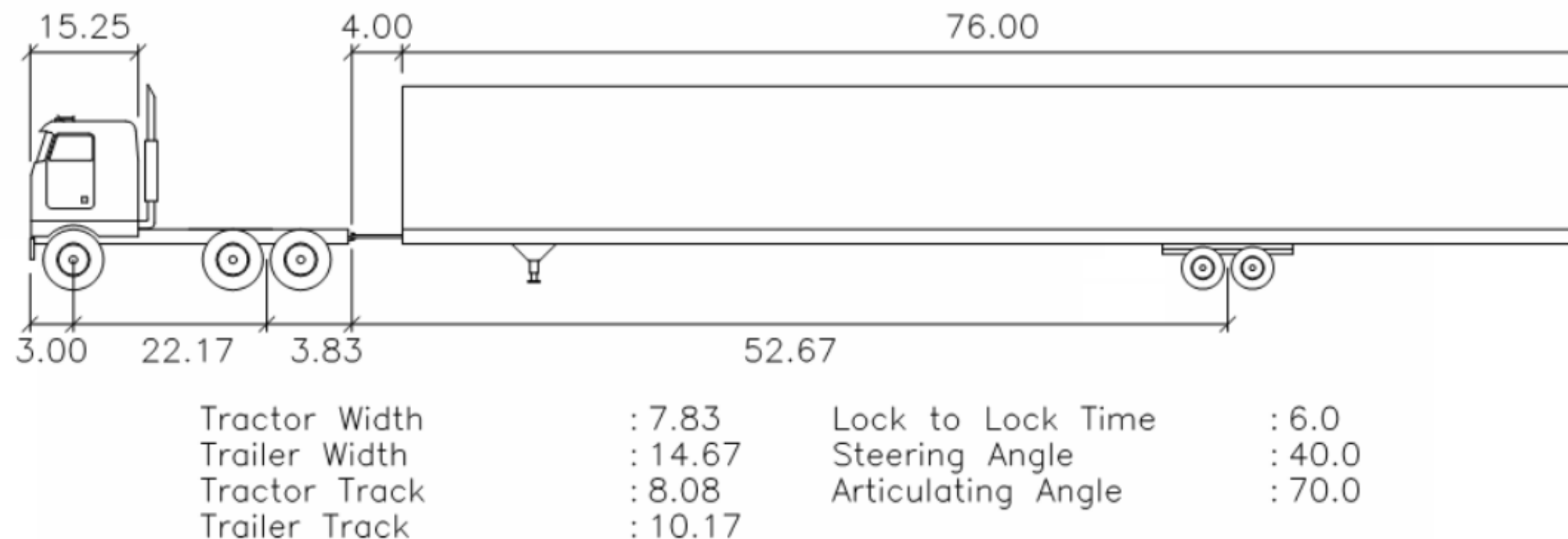




# Over-dimension Vehicle Simulation

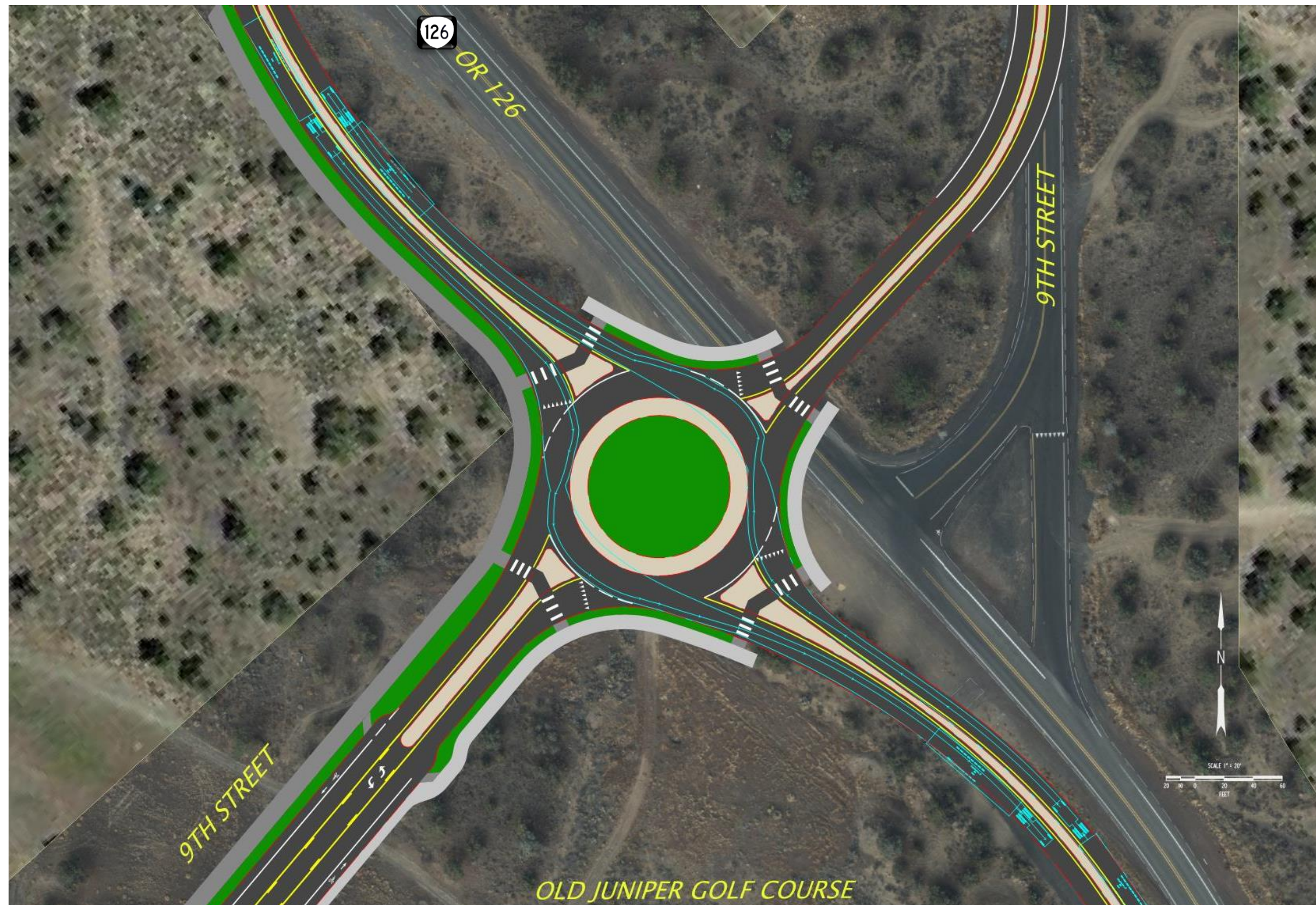
**Simulation Vehicle:** Mobile Home (Custom Vehicle Template)

A mobile home can navigate the EB/WB through (OR126) movements without encroaching on outside mountable curbs, but does not have 1' curb clearance throughout roundabout.





# Mobile Home Turning Movements: EB/WB Through (OR126)

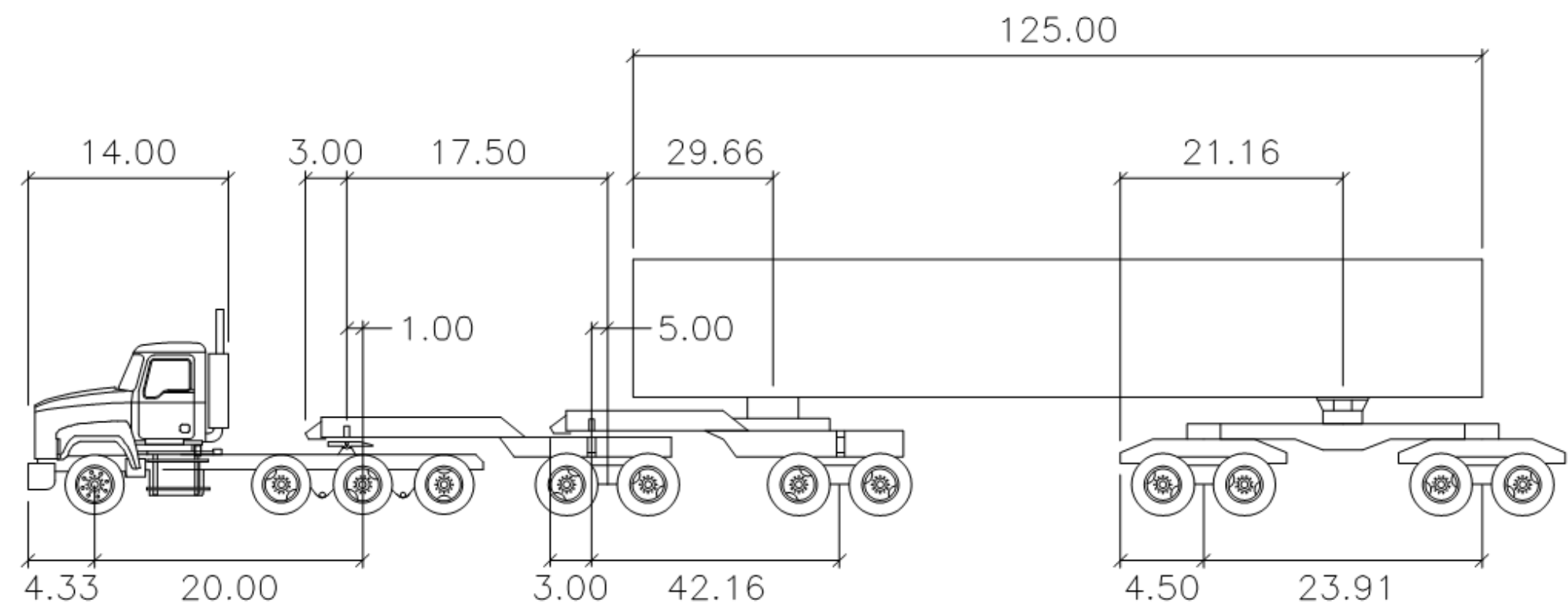




# Over-dimension Vehicle Simulation

**Simulation Vehicle:**     Wilhelm Beam Hauler 173 (Custom Vehicle Template)

This vehicle navigates the EB/WB through (OR126) movements with major encroachment on outside mountable curbs.

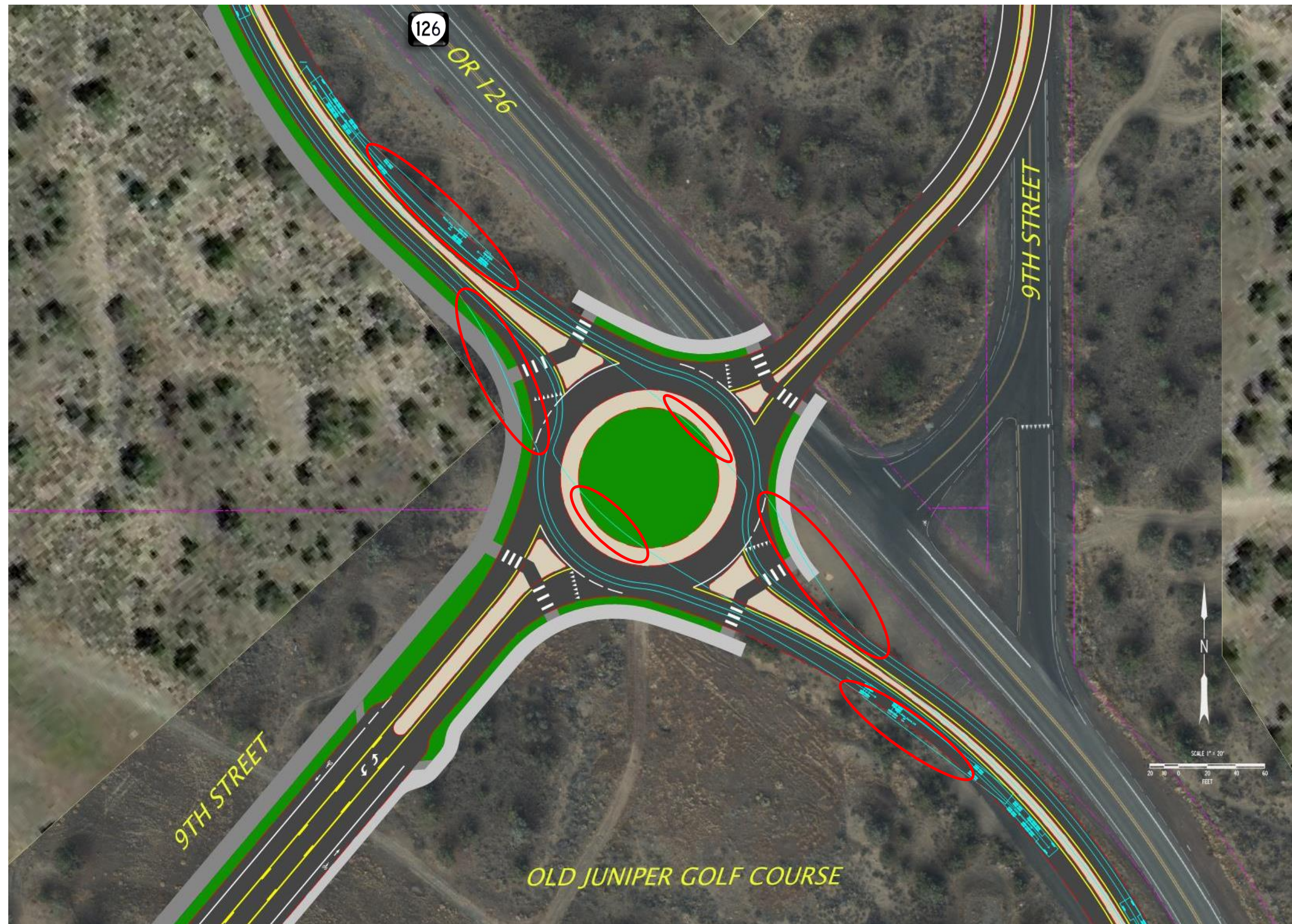


Wilhelm\_Beam\_Hauler2\_173

	feet		
Tractor Width	: 8.50	Lock to Lock Time	: 6.0
Trailer Width	: 8.00	Steering Angle	: 40.0
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.00		



# Beam Hauler Turning Movements: EB/WB Through (OR126)



○ Wheel track encroachment on mountable curb



# Single Trip Permit Information: Width

Overall Width	Number of Permits Issued
8'6" or less (legal width)	172
8'7" to 10'	140
10' to 11'	263
11' to 12'	433
12' to 13'	100
13' to 14'	162
Over 14'	222

## Analysis of Widest Loads:

- 35 of the permits over 14 feet in width were modular building/mobile homes, none of which had a width greater than 15 feet.
- 10 permits were for swimming pools, all were between 15 to 16 feet in width, less than 80 feet in overall length (OAL), and legal weight.
- 30 permits were for different types of empty tanks, 2 of those were 18 feet in width, and the rest were less than 16 feet in width.
- There were 12 permits that were over 20 feet in width.
  - The widest load was 24 feet in width, 106 feet in OAL, 14'4" high and 154k lbs.
  - There were 4 steel structures at 22 feet in width, which were the longest at 166 feet in OAL.



# Single Trip Vehicle Permit Information: Length

Overall Length (including overhang)	Number of Permits Issued
70' or less	208
71' to 80'	737
81' to 90'	259
91' to 100'	97
101' to 110'	124
111' to 120'	35
Over 120'	32

## Analysis of Longest Loads:

- The longest load was for a heavy haul combination. It was 215 feet in OAL, 14'6" in width, and 267k lbs.
- There were 14 other permits over 150 in OAL.
  - 9 were for windmill blades
  - 4 were 22 foot wide steel structures and 1 was a tank.



# Single Trip Vehicle Permit Information: Type

Types of Vehicle Combinations Permitted	Number of Permits Issued
Truck (Solo Vehicle) or Self Propelled Units (like cranes)	31
Doubles	0
Truck-Tractor + Semitrailer or Truck-Tractor +Tow-Away Unit	1035
Truck +Trailer	58
Log Truck + Pole Trailer	18
Heavy Haul Combination (Truck-Tractor/Jeep/Semitrailer/ Booster)	289
Toter + Mobile Home	47

## Analysis of Combinations:

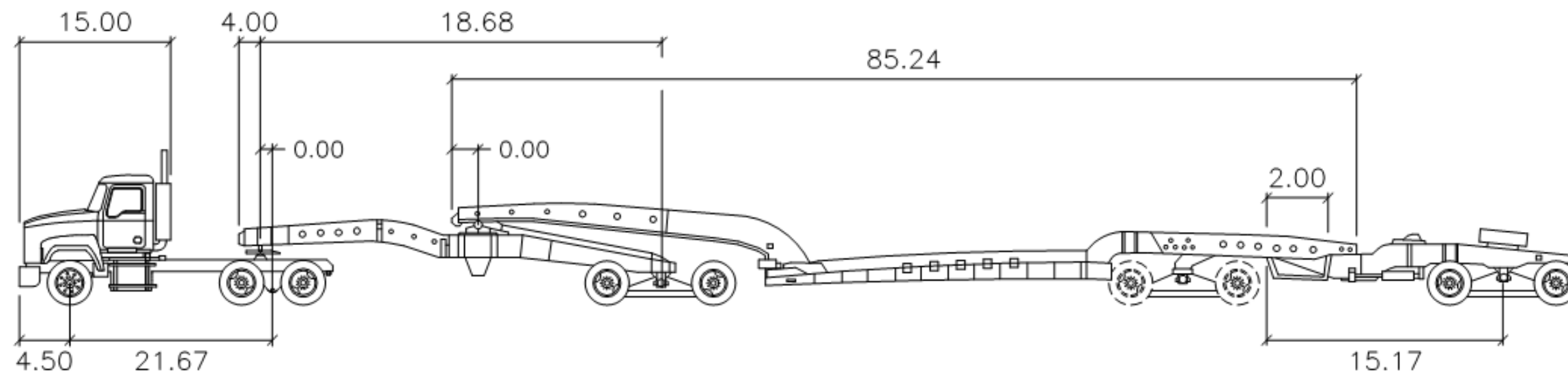
- All but 3 of the Truck & Trailer Combinations were for the same carrier hauling roof trusses.
- 145 of the permits for Truck-Tractor & Semitrailer combinations used trailers or tow away units that were over 53' long.
- The longest trailers were 125 in length and were used for hauling windmill blades, there were 9 permits for these.



# OR126/Tom McCall Roundabout Accommodation Vehicle

**Accommodation Vehicle:** 135' Booster

The roundabout at Tom McCall accommodates a 135' booster vehicle at all **through** movements without encroachment on outside curbs.



BOOST\_EL=135

feet

Tractor Width : 8.50  
Trailer Width : 4.00  
Tractor Track : 8.50  
Trailer Track : 8.50

Lock to Lock Time : 6.0  
Steering Angle : 40.0  
Articulating Angle : 70.0



# Questions & Next Steps

